CLAIMS

1. A process for the preparation of cross-linked polysaccharides containing carboxy groups, comprising:

a) activation of the carboxy groups of the polysaccharide by reaction with suitable carboxy activating groups in anhydrous aprotic solvent;

b) reaction of the carboxy activated polysaccharide with a polyamine.

2. A process according to claim 1, wherein the polysaccharide is selected from Hyaluronic acids (obtained from tissues or bacteria), carboxymethyldextran, carboxymethylcellulose, carboxymethylstarch, alginic acids, cellulosic acid, N-carboxy-methyl or butyl glucans or chitosans; heparins with different molecular weights, optionally desulphated and succinylated, dermatan sulphates, chondroitin sulphates, heparan sulphates, polyacrylic acids.

3. A process according to claim 1 or 2, wherein the carboxy activating agent is selected from carbonyldiimidazole, carbonyltriazole, chloromethylpyridylium iodide (CMP-J), hydroxybenzotriazole, p-nitrophenol p-nitrophenyltrifluoroacetate, N-hydroxysuccinimide.

4. A process according to any one of claims 1 to 3, wherein the polyamines have the following general formula:

$$R_1\text{-NH-A-NH-}R_2$$

wherein R_1 and R_2, which are the same or different, are hydrogen, C_1-C_6 alkyl, phenyl or benzyl groups, A is a C_2-C_{10} alkylene chain, preferably a C_2-C_6 alkylene chain, optionally substituted by hydroxy, carboxy, halogen, alkoxy, amino groups; a polyoxyalkylene chain of formula

$$[(CH_2)_n\text{-O-}(CH_2)_n]_m$$

wherein n is 2 or 3 and m is an integer from 2 to 10; a C_5-C_7 cycloalkyl group; an aryl or hetaryl group, preferably 1,3 or 1,4-disubstituted benzene.

5. A process according to any one of claims 1 to 4, wherein the

polysaccharide is salified with lipophilic cations.

6. A process according to claim 5, wherein the lipophilic cation is tributyl or tetralkyl ammonium.

7. A process according to any one of claims 1 to 6, wherein the cross-linking reaction is carried out in anhydrous dimethylformamide or tetrahydrofuran.

8. A process according to any one of claims 1 to 7, wherein the obtained cross-linked polysaccharide is further subjected to sulfation of the hydroxy groups by reaction with the pyridine/sulfur trioxide complex.

9. A process according to claim 8, wherein the sulfation reaction is carried out in dimethylformamide in heterogeneous phase at 0-10°C for times from about 0.5 to about 6 hours.

10. A process according to any one of claims 1 to 9, wherein the cross-linked, optionally sulfated polysaccharide, is further subjected to complexation reaction with aqueous solutions of copper, zinc or iron ions.

11. Cross-linked polysaccharides obtainable by the process of claims 1 to 10.